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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,270	04/14/2004	James Thomas Doyle	100-19410 (P05247-D01)	6195

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EXAMINER

TRAN, LONG K

ART UNIT PAPER NUMBER

2818

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/824,270

Applicant(s)

DOYLE ET AL.

Examiner

Long K. Tran

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amdt on November 18, 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20 - 38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20 - 24 and 29 - 31 is/are rejected.
- 7) ☒ Claim(s) 25 - 28 and 32 - 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/14/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in response to Amendment filed on November 18, 2004.
2. Claims **1 – 19** have been cancelled.
3. Claims **20 – 38** are presented for examination.
4. The rejections under 35 U.S.C. 112, second paragraph, in the previous Office Action have been withdrawn.

Information Disclosure Statement

5. This office acknowledges of the following items from the Applicant:
Information Disclosure Statement (IDS) filed on April 14, 2004.

The references cited on the PTO -1449 form have been considered (with changes by the examiner authorization from Mr. Mark C. Pickering on January 12, 2005.

EXAMINER'S AMENDMENT

6. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Mark C. Pickering on January 17 & 19, 2005.

The application has been amended as follows:

Claim 21, line 10 and line 12: change "layer of isolation material" to -- plurality of gate isolation layer --;

Claim 32, line 9 and line 10: change "fifth" to -- sixth -- and "seventh" to -- eighth --;
-;

Claim 34, line 8 and line 9: change "fifth" to -- sixth -- and "seventh" to -- eighth --;
Specification page 15, lines 16, 20, 22 & 24: change "isolation" to -- insulation --

For clarification purpose, the applicants indicate:

630, 634 and 640 (fig. 6b) are designated to "a plurality of gate isolation layer;
670 (fig. 6b) is designated to "layer of isolation material"
680, 682 and 684 (fig. 6b) are designated to "a plurality of contacts"; and
710 (fig. 7b) is designated to "a layer of insulation material".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims **20, 21, 22, 23, 24, 29, 30** and **31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mehrotra et al. (US Patent No. 6,686,300) in view of Erb (US Patent No. 4,247,916)

9. Regarding claim **20**, Mehrotra et al. disclose an MOS transistor comprising: a first strip of a first conductivity type 12 (attached (revised) figure 2 and figures 3a – 4), a first strip having a width that varies with length from a first width W_1 (attached (revised) figure 2 and figures 3a – 4), to a second larger width W_2 (figs. 2 – 3b attached (revised)

figure 2 and figures 3a – 4) to the first width W_1 (attached (revised) figure 2 and figures 3a – 4); refer to column 3, lines 36+ and column 4, line 1 – 21);

a second strip of the first conductivity type 14 (attached (revised) figure 2 and figures 3a – 4), a second strip having a width that varies with length from a third width W_3 (attached (revised) figure 2 and figures 3a – 4) to a fourth smaller width W_4 (attached (revised) figure 2 and figures 3a – 4) to the third width W_3 (attached (revised) figure 2 and figures 3a – 4), a line normal to the lengths of the first strip and the second strip passes through the first width and the third width, the third width W_3 being larger than the first width W_1 refer to column 3, lines 36+ and column 4, line 1 – 21);

a channel region strip, a channel region strip 18 (figs. 2 – 3b) located between (and under the gate strip 15 (not shown)) adjacent first and second strips, the channel region strip having a shape that varies with length, the shape being defined by the adjacent first and second strips; refer to column 3, lines 36+ and column 4, line 1 – 21) ;
and

a gate strip, a gate strip 15 (figs. 2 – 3b) formed over each channel region strip, the gate strip having a shape that varies with length and substantially matches the shape of the channel region strip; refer to column 3, lines 36+ and column 4, line 1 – 21).

Mehrotra et al. do not explicitly show a plurality of first strips, second strips, channel regions and gate strips.

It is conventional and also shown by Erb that device 100 (fig. 1) comprising a plurality of first and second strips 114 and 116, channel regions 118 and gate strips 134R (fig. 1; column 2, lines 27 – 50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a device Mehrotra et al. with a plurality of first strips, second strips, channel regions and gate strips as shown by Erb in order to provide a random access memory having a density approaching the theoretical limit (Erb, column 1, lines 48 – 50) by using higher density of active devices for a given chip area (Mehrotra, column 1, lines 22 – 35).

Regarding claim **21**, Mehrotra et al. disclose an MOS transistor comprising: a MOS transistor formed in a semiconductor material of a first conductivity type (column 3, lines 40 – 50), the MOS transistor comprising:

a source strip 12 (figs. 2 – 3b) of a second conductivity type formed in the semiconductor material (column 3, lines 40 – 50);

a plurality of drain strip of the second conductivity type formed in the semiconductor material (column 3, lines 40 – 50);

a channel region strip 18 (figs. 2 – 3b) located between (and under the gate strip 15 (not shown)) adjacent the source and the drain strips;

a layer of isolation material 18 (figs. 3a – 3b) formed on the semiconductor material over the channel strips; and

a gate strip, a gate strip 15 (figs. 2 – 3b) formed on the isolated material over the channel strip, the gate strip between source trip and drain strip

Mehrotra et al. do not explicitly show a plurality of source strips, drain strips, channel trips and gate strips.

It is conventional and also shown by Erb that device 100 (fig. 1) comprising a plurality of first and second strips 114 and 116, channel regions 118 and gate strips 134R (fig. 1; column 2, lines 27 – 50).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form a device of Mehrotra et al. with a plurality of source strips, drain strips, channel strips and gate strips as shown by Erb in order to provide a random access memory having a density approaching the theoretical limit (Erb, column 1, lines 48 – 50) by using higher density of active devices for a given chip area (Mehrotra, column 1, lines 22 – 35).

Regarding claim **22**, Mehrotra et al. disclose a source strip has:

a center chord that lies along a longitudinal centerline of the source strip (figs. 2, 4 & 5a– 5d);

a first edge having a plurality of spaced-apart first points and a plurality of spaced-apart second points; and

an opposing second edge having a plurality of spaced-apart third points and a plurality of spaced-apart fourth points, each first point having a corresponding third point and being separated from the corresponding third point by a first distance measured along a first line normal to the center chord, each second point having a corresponding fourth point and being separated from the corresponding fourth point

by a second distance measured along a second line normal to the center chord, the second distance being less than the first distance. Refer to column 4, lines 59+, column 5, lines 1 – 15 and column 7, lines 12 – 57.

Regarding claim **23**, Mehrotra et al. disclose a second point lies between an adjacent pair of first points on the first edge (figs. 2, 4 and 5a – 5d).

Regarding claim **24**, Mehrotra et al. disclose a fourth point lies between an adjacent pair of third points on the second edge (figs. 2, 4 and 5a – 5d).

Regarding claim **29**, Mehrotra et al. disclose a drain strip has a middle chord that lies along a longitudinal centerline of the drain strip;

a first edge having a plurality of spaced-apart fifth points and a plurality of spaced-apart sixth points; and
an opposing second edge having a plurality of spaced-apart seventh points and a plurality of spaced-apart eighth points, each fifth point having a corresponding seventh point and being separated from the corresponding seventh point by second distance measured along the first line, each sixth point having a corresponding eighth point and being separated from the corresponding eighth point by the first distance measured along the second line. Refer to column 4, lines 59+, column 5, lines 1 – 15 and column 7, lines 12 – 57.

Regarding claim **30**, Mehrotra et al. disclose a sixth point lies between an adjacent pair of fifth points.

Regarding claim **31**, Mehrotra et al. disclose a sixth point lies between an adjacent pair of seventh points.

Allowable Subject Matter

10. Claims **25, 26, 27, 28, 32, 33, 34, 35, 36, 37** and **38** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is an examiner's statement of reasons for the indication of allowable subject matter: Claims **25, 26, 27, 28, 32, 33, 34, 35, 36, 37** and **38** are allowable over the prior art of record because none of the prior art whether taken singularly or in combination, especially when these limitations are considered within the specific combination claimed, to teach:

A plurality of contacts being connected to regions of source strips that lie between first points and corresponding third points as cited in claims 25 and 27; a plurality of contacts being connected to regions of drain strips that lie between sixth points and corresponding eighth points as cited in claim 32; a plurality of contacts being connected to each region of source strip that lie between first points and corresponding third points and each region of drain strip that lie between sixth points and corresponding eighth points as cited in claim 34.


Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long K. Tran whose telephone number is 571-272-1797. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Long Tran 
January 20, 2005


David Nelms
Supervisory Patent Examiner
Technology Center 2800